

PATENT SPECIFICATION

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(54) COFFEE MAKER

(71) We, N. V. PHILIPS' GLOBE-
 LAMPENFABRIEKEN, of Emmasingel 29,
 Eindhoven, Holland, a limited liability
 Company, organised and established under
 the laws of the Kingdom of the Nether-
 lands, do hereby declare the invention, for
 which we pray that a patent may be
 granted to us, and the method by which it
 is to be performed, to be particularly de-
 scribed in and by the following
 statement:—

The invention relates to a coffee maker
 of the filter type comprising a heating plate
 for a collecting vessel of a filter device and
 underneath the heating plate a pump
 chamber which is provided with a steam
 space, an outlet conduit connected to the
 pump chamber for conveying the water
 heated in the pump chamber to the filter
 device, and a common heating element for
 the heating plate and the pump chamber.

Such a coffee maker is described and
 claimed, for example, in the specification
 accompanying British Patent No. 1,283,013.
 In the present specification, the term
 "steam space" is used with the meaning
 defined in this patent specification, being a
 part of the pump chamber which is partly
 bounded by wall portions which extend at
 right angles to the direction in which the
 water is conveyed. The effective pump ac-
 tion in this coffee maker is achieved by
 means of the pump chamber with the
 steam space which results in the water
 passing fairly rapidly through the pump
 chamber. This can give rise to a problem
 in that the temperature of the water having
 passed through the pump chamber may be
 below the optimum value required for cof-
 fee making.

It is an object of the invention to
 provide a construction in which this un-
 wanted lowering of water temperature is
 reduced.

According to the invention, there is

provided a coffee maker of the filter type
 having a heating plate for a collecting ves-
 sel of a filter device and underneath the
 heating plate a pump chamber provided
 with a steam space as hereinbefore defined,
 an outlet conduit connected to the pump
 chamber for conveying the water heated in
 the pump chamber to the filter device and
 a common heating element for the heating
 plate and the pump chamber, in which the
 heating element, heating plate and pump
 chamber are thermally connected to a
 thermally conductive body and a wall of a
 part of the outlet conduit adjoining the
 pump chamber is also thermally connected
 to said body.

In a preferred embodiment having a U-
 shaped heating element adjacent to which
 the pump chamber is located, the pump
 chamber contacts one of the legs of the U-
 shaped element and the portion of the
 element connecting the two legs, the other
 leg of the U-shaped element being in heat-
 transfer contact with a part of the outlet
 conduit adjoining the pump chamber over
 substantially the whole length of said other
 leg.

An embodiment of the invention will
 now be described by way of example with
 reference to the accompanying drawings in
 which:

Figure 1 is an elevation of a coffee
 maker,

Figure 2 is a bottom plan view of a
 heating plate, a pump chamber and a heat-
 ing element, and

Figure 3 is a sectional view taken on the
 line III-III in Figure 2.

The coffee maker shown in Figure 1
 contains a water reservoir 1 and a base 2.
 The base accommodates the heating plate,
 the pump chamber and the heating element
 which together form an assembly 3. An
 inlet conduit 4 connects the pump chamber
 with the reservoir 1 and an outlet conduit

5 connects the pump chamber to a discharge pipe 6. The water reaches a filter holder 8 containing the ground coffee, via a spout 7 of the discharge pipe 6. The filter holder 8 is located on a filter vessel 9 in which the coffee brew is collected. The base 2 has an opening at the top so that the filter vessel 9 can directly rest on the heating plate.

10 Figures 2 and 3 show details of the assembly 3 which comprises a heating plate 19 located above a pump chamber 11 and a heating element 10. The assembly 3 in this embodiment comprises a metal casting which acts as a thermally conductive body. The element 10 is substantially U-shaped and located in a U-shaped groove in said casting. The pump chamber 11 is partly surrounded by the heating element 10 and contacts a leg 12 and a connecting piece 13 of the element 10. A part of the pump chamber forms a steam space as described in the aforementioned patent specification. The pump chamber 11 is closed by an access plate 14 which is secured to the assembly 3 by means of a bolt 15.

The ends of the steam space are defined by wall portions, as already mentioned, but these wall portions are not visible in Figure 2 because they are located beneath parts of the pipe covered by the edges of the plate 14.

A part 17 of the outlet conduit 5 is located in a portion 16 of the assembly 3 and connects to the pump chamber 11. This portion 16 houses the leg 18 of the heating element. The leg 18 of the element is therefore in heat transfer contact with the parts 17 since the portion 16 enables a good transfer of heat to take place between the heating element and the water in the part 17 of the outlet conduit 5. The temperature of the water which has already been heated in the pump chamber is further raised when the water enters the part 17 of the outlet conduit until the optimum temperature for coffee filtration is attained. The extent to which the temperature of the water in the part 17 is increased is influenced *inter alia* by the length over which said part 17 is in heat transfer contact with the leg 18 of the heating element 10.

WHAT WE CLAIM IS:—

1. A coffee maker of the filter type having a heating plate for a collecting vessel of a filter device and underneath the heating plate a pump chamber provided with a steam space as hereinbefore defined, an outlet conduit connected to the pump chamber for conveying the water heated in the pump chamber to the filter device and a common heating element for the heating plate and the pump chamber, in which the heating element, heating plate and pump chamber are thermally connected to a thermally conductive body and a wall of a part of the outlet conduit adjoining the pump chamber is also thermally connected to said body.

2. A coffee maker as claimed in claim 1, having a U-shaped heating element adjacent to which the pump chamber is located, in which the pump chamber contacts one of the legs of the U-shaped element and the part of the element connecting the two legs, the other leg of the U-shaped element being in heat transfer contact with a part of the outlet conduit adjoining the pump chamber over substantially the whole length of said other leg.

3. A coffee maker as claimed in Claim 1 or 2, in which the heating element is located in a groove of said thermally conductive body.

4. A coffee maker as claimed in any one of Claims 1 to 3, in which the thermally conductive body is a metal casting.

5. A coffee maker as claimed in any one of Claims 1 to 4, in which the pump chamber is closed by an access plate.

6. A coffee maker as claimed in Claim 5, in which the access plate is secured by a bolt to the thermally conductive body.

7. A coffee maker substantially as hereinbefore described with reference to the accompanying drawings.

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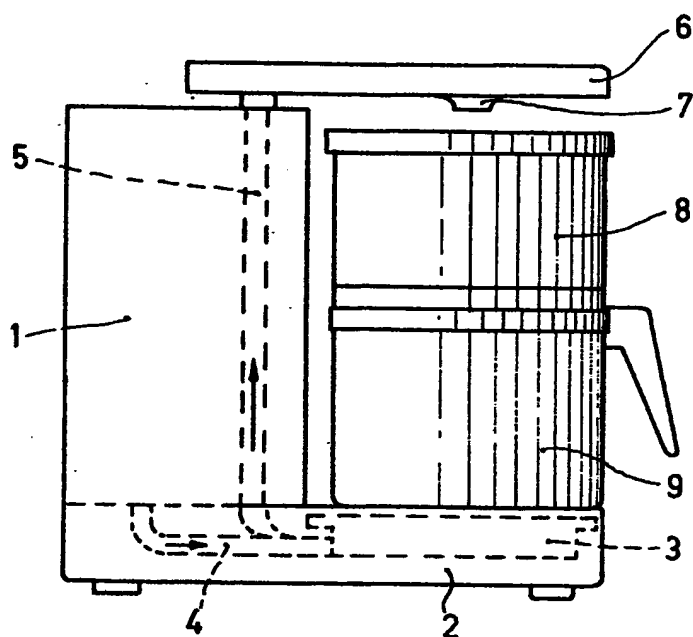


Fig. 1

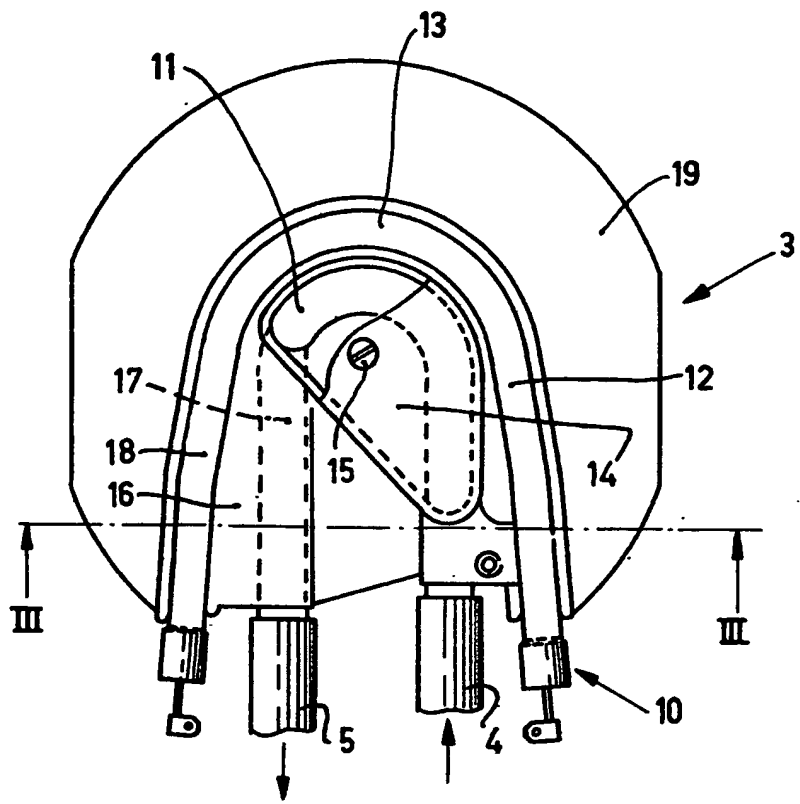


Fig. 2

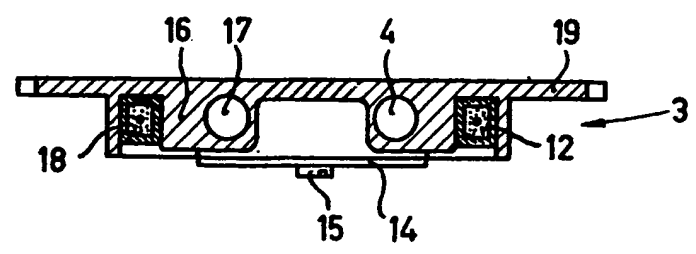


Fig. 3